

Claims

What is claimed is:

- 5 1. A composition comprising at least one carbohydrate dissolved in at least one solvent
at a sufficiently high concentration of said carbohydrate wherein said composition
forms a thermoplastic at room temperature.
2. The composition of claim 1 wherein said carbohydrate is cellulose, cellulose derivatives,
10 alginate, agar, algin, carrageenan, fucoidan, furcellaran, laminaran, gum Arabic, gum
ghatti, gum karaya, gum tragacanth, guar gum, locust bean gum, okra gum, chitin,
starch, pectin, xanthan gum, scleroglucan gum, dextrans, or combination thereof.
3. The composition of claim 2 wherein said cellulose has a DP in the range of 100 to
15 3000.
4. The composition of claim 2 wherein said cellulose is recycled fiber.
5. The composition of claim 1 wherein said solvent is aqueous zinc chloride.
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6. The composition of claim 5 wherein the concentration of said aqueous zinc chloride is
greater than fifty percent by weight.
7. The composition of claim 5 wherein the concentration of said aqueous zinc chloride is
25 greater than sixty-seven percent by weight.
8. The composition of claim 1 wherein said solvent is N-methylmorpholine-N-oxide.
9. The composition of claim 1 wherein said carbohydrate is pre-wetted prior to addition of
30 said solvent.
10. The composition of claim 9 wherein said pre-wetting is accomplished with equal
weights of carbohydrate and water.
- 35 11. The composition of claim 1 wherein carbon dioxide gas is pumped into an extruder to
cause foaming of a carbohydrate/solvent solution.

12. The composition of claim 1 wherein said composite is produced from a carbohydrate solution concentration of about 0.5 percent to about sixty percent.
- 5 13. A fiber, film, or nonwoven structure produced by extrusion of the composition of claim 1.
14. The structure of claim 13 wherein the extrusion process is spunbond or meltblown.
- 10 15. The structure of claim 13 wherein said structures are plied or laminated.
16. An article produced by the regeneration of the structure of claim 13.
17. An article produced by the regeneration of the structure of claim 13 to obtain cellulose I,
15 cellulose II, or amorphous cellulose properties.
18. A product in which the structure of claim 13 further comprises additional non-cellulosic nonwovens.
- 20 19. The article of claim 16 wherein said product is a personal or medical care article.
20. The article of claim 19 wherein said article comprises bandages, tissues, absorbent composites, dressings, gauze, diapers, disposable training pants, incontinence articles, sanitary napkins, disposable garments, disposable surgical gowns or drapes, face
25 masks, inserts for absorbent articles, shoe inserts, antiperspirant patches, breast pads, helmet liners, wound dressings, sterile wrap, covers for automobiles, and disposable ground covers.
21. A method of making a composition comprising dissolving at least one carbohydrate in
30 at least one solvent at a sufficiently high carbohydrate concentration at ambient temperature or greater to form a thermoplastic.
22. The method of claim 21 wherein said carbohydrate is cellulose, cellulose derivates, alginate, agar, algin, carrageenan, fucoidan, furcellaran, laminaran, gum Arabic, gum
35 ghatti, gum karaya, gum tragacanth, guar gum, locust bean gum, okra gum, chitin, starch, pectin, xanthan gum, scleroglucan gum, dextrans, or combination thereof.

23. The method of claim 22 wherein said cellulose has a DP in the range of 100 to 3000.
24. The method of claim 22 wherein said cellulose is recycled fiber.
- 5 25. The method of claim 21 wherein said solvent is aqueous zinc chloride.
26. The method of claim 25 wherein the concentration of said aqueous zinc chloride is greater than fifty percent by weight.
- 10 27. The method of claim 25 wherein the concentration of said aqueous zinc chloride is greater than sixty-seven percent by weight.
28. The method of claim 21 wherein said solvent is N-methylmorpholine-N-oxide.
- 15 29. The method of claim 21 wherein said carbohydrate is pre-wetted prior to addition of said solvent.
30. The method of claim 29 wherein said pre-wetting is accomplished with equal weights of carbohydrate and water.
- 20 31. The method of claim 21 comprising the additional step of pumping carbon dioxide gas into an extruder to cause foaming of a carbohydrate/solvent solution.
- 25 32. The method of claim 21 wherein said composite is produced from a carbohydrate solution concentration of about 0.5 percent to about sixty percent.
33. A method of producing a personal or medical care article comprising the steps of:
- Dissolving a carbohydrate in a solvent to form a thermoplastic composition;
 - 30 • Extruding said composition into a fiber, film, or nonwovens structure; and
 - Regenerating said structure.
34. The method of claim 33 comprising the additional step of adding previously made non-carbohydrate structures.
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